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AUTHOR Slaughter, Helen B.; Powers, Stephen
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ABSTRACT

A total of 96 students identified as academically at risk were selected to participate in an extended-day kindergarten program featuring small class size and a whole-language approach to the curriculum and learning. High-risk students attended regular morning kindergarten classes as well as the extended-day sessions; comparison students attended morning classes only. Additional instruction time for the high-risk students ranged from 119 to 242 hours, depending upon which of five participating schools the students attended. A pretest posttest design was used to compare gains on the Listening subtest of the California Achievement Test, Part C, made by 33 students participating in five extended-day classrooms with gains made by 191 students in the same or similar schools who attended half-day kindergarten classes. A similar analysis was performed on gains on the "Prueba Boehm de Conceptos Basicos" made by 14 participants and 27 nonparticipants with limited English-speaking ability. The extended-day kindergarten was found to have a positive effect on the achievement of students regardless of students' language background. Program participants made statistically and educationally significant gains on standardized tests and on teacher ratings of classroom performance. In one school, where all 29 students participated in two extended-kindergarten classrooms, pretest posttest gains on the Metropolitan Readiness Test were higher than in previous years. (Author/RH)

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Abstract

Students identified as high risk academically were selected to participate in an extended-day kindergaten program featuring small class size and a whole-language approach to learning. A pre-posttest design was used to compare the gains of 33 students participating in 5 extended-day classrooms to 191 other students in the same or similar schools who attended kindergarten half-days on the Listening subtest of the CAT/C. A similar analysis was performed on the gains of 14 participants and 27 non-participants with limited English speaking ability on the Prueba Boehm de Conceptos Basicos. The extended-day kindergarten was found to have a positive effect on the achievement of students regardless of language background. In an additional school, Richey, where all 29 students participated in two Extended-K classrooms, the pre-posttest gains on the Metropolitan Readiness Test were higher than in previous years.

Program Overview

Recent research has suggested that increasing the length of the school day has positive effects upon the achievement of elementary school students (Berliner and Rosenshine, 1976). However, in a review of the literature, no conclusive evidence was found for effects on achievement of lengthening the kindergarten day (Beckner cited in Mitzel, 1982). In this study 96 kindergarten students, identified as below average in entry level abilities related to school performance and success, were selected to participate in a small class size extended-day kindergarten program at five TUSD Chapter I and district target schools. The extended-day program was developmental in nature and included play and other experiential activities for developing oral language and early literacy through a whole-language approach to the curriculum. Students in the treatment group attended both the regular morning kindergarten program as well as the extended-day program. Class sizes in the regular district program were approximately 1-30 with one teacher while the extended-day sessions were 1-15 with a teacher and aide. **Additional instructional hours for the treatment group ranged from 119 to 242 hours depending upon the school.** Small group size and carefully planned developmental tasks implied that most of the added times was "engaged" learning time for students.

Program Implementation

Chapter I funding was used to provide extened-day kindergarten teacher and instructional aide salaries as well as providing materials and supplies, inservices, supervision and evaluation services for the project. Three project classrooms were staffed with teachers who taught in the Chapter I preschool project PACE in the mornings while the other four were staffed with kindergarten half-time kindergarten teachers. More detailed information about the cost of the project and data regarding student participation and achievement is found in the Technical Supplement to this report which includes Tables A-G.

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Each extended kindergarten project was designed cooperatively by Chapter I central staff, principals and kindergarten teachers to best serve the needs of students and fit into the ongoing program at the particular school. Projects at Mission View, Richey and Rose were planned in spring 1982 and began in fall 1982. The two extended kindergarten sessions at Mission View were scheduled Monday through Thursday and were two hours long. One session was implemented by the PACE teacher, allowing Friday afternoons for PACE parent meetings and home visits, the other session was implemented by extending one morning kindergarten teacher to full-time. A similar plan of two extended-k classes was implemented at Richey but on a three day, Tuesday through Thursday basis, with an hour and 45 minute session. The Rose school extended-k, implemented by the PACE teacher, had the same time schedule as Richey.

Cavett and Van Buskirk initiated extended-k programs later in the fall using funds that became available through carryover funds. These projects, initiated in January and December respectively, were implemented by half-time teachers and were scheduled Monday through Friday for approximately two hours and 15 minutes.

Monthly inservices for staff were a part of the project. As part of the staff development component, extended kindergarten teachers, regular district kindergarten teachers, consultants and Chapter I central staff developed a Chapter I Extended Time Kindergarten Guide to focus program activities and methodology upon project goals and to assist principals and teachers in planning and carrying out a high quality program. In writing the curriculum guide, emphasis was placed upon using a strong developmental approach to early childhood education and emergent literacy. The focus of the project was upon a holistic, integrated curriculum and building upon student strengths. The curriculum guide, which supplements the TUSD curriculum, is available through the Chapter I Office.

Sample And Evaluation Design

Students who were bilingual or monlingual in English were pre-posttested on the Listening subtests of the CAT/C, Level 10 or the Metropolitan Readiness Test (Richey only).

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Students who were monolingual or predominant in Spanish were pre-posttesed on the Prueba Boehm de Conceptos Basicos. Data was obtained on participating and non-participating students in five low socio-economic schools including a comparison school. All included a high percentage of minority students (Hispanic, Black, American Indian). At the sixth school, Richey, all students qualified for the project and were served in two extended-day classrooms implemented by the kindergarten and PACE teacher. (Richey was a Follow-Through School and evaluation results for Richey kindergarten students are found in the 1982-83 Follow-Through Evaluation Report.)

Students were also rated pre and posttested by their classroom teachers on the Child Performance Scale in the areas of 1) Self-development and Independence, 2) Social Interaction, 3) Communication, 4) Creative Development, 5) Thinking and 6) Motor Development. Parents were rated for degree of parental participation. Student attendance in the Extended Kindergarten Project, as well as information about previous enrollment in preschool, was collected.

Results

Students attending the Chapter I Extended Kindergarten Programs made statistically and educationally significant gains on standardized tests and on teacher ratings of classroom performance. The data presented in Table 1 indicates that the achievement of English speaking, monolingual and bilingual children participating in an enriched and longer kindergarten day program improved dramatically while the achievement level of children who went to kindergarten for only the regular half-day declined relative to the national norm group. The posttest raw score means of the Chapter I (12.42) and non-Chapter I students (12.64) were even closer than suggested by the Normal Curve Equivalents (NCEs) and percentiles shown in Table 1 but due to rounding the difference between groups appears larger than it actually was.

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Table 1. Differences Between Pre-Posttest NCE [1] Means for English Speaking Monolingual or Bilingual Kindergarten Students on the CAT/C, Level 10, Listening for Information Subtest

School	Chapter I Ext. K				Non-Ext. K Students			
	N	Pre NCE/P	Post NCE/P	Diff NCE	N	Pre NCE/P	Post NCE/P	Diff NCE
Cavett	13	24/11	31/19	7***	38	45/41	42/35	-3**
Mission View	5	17/06	27/14	10*	34	35/24	31/19	-4***
Rose	4	35/24	50/50	15 N.S.	57	45/41	42/35	-3***
Van Buskirk	11	29/16	60/69	31***	27	51/52	50/50	-1 N.S.
Comparison School					35	45/41	36/26	-9**
Total	33	24/11	36/26	12***	191	45/41	52/35	-3***

[1]**Note:** Normal Curve Equivalents (NCEs) were derived from rounded raw score means converted to standard scores and empirical norms provided by the test publisher.

*p .05
**p .01
***p .001

As seen in Table 2, Chapter I students entering school as Spanish, monolingual and/or Spanish dominant **and limited English speaking** also made educationally and statistically significant gains. The end-of-year achievement level of Chapter I students was almost as high as that of the non-participating students in terms of NCE, percentile and raw score means (The Chapter I posttest raw score mean was 35.71 and the non-Chapter I mean was 36.67).

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Table 2. Differences Between NCE[1] Means for Spanish Monolingual or Dominant Kindergarten Students on the Prueba Boehm de Conceptos Basicos for Kindergarten Students, 1982-83

School	Chapter I Ext. K				Non-Ext. K Students		
	N	Pre NCE/P	Post NCE/P	Diff NCE	N	Pre NCE/P	Post NCE/P	Diff NCE
Cavett	1	32.3/20	67.7/80	35.4	5	39.0/30	30.7/18	-8.3
Mission View	11	23.0/10	37.7/28	14.7	2	32.3/20	17.3/06	-15.0
Rose	0				12	50.0/50	50.0/50	-
Van Buskirk	2	41.9/35	40.7/33	1.2	5	52.6/55	44.7/40	-7.9
Comparison School	0				3	35.8/25	29.9/17	-5.9
Total	14	28.2/15	40.7/33	12.5	27	47.4/45	41.9/35	-5.5

[1]Note: Raw score means were converted to percentiles and Normal Curve Equivalents (NCEs). Middle SES Norms for beginning of K were used for the pretest. Enterpolated norms were estimated at midpoint between K midyear and Grade 1 beginning of year norms as end-of-K norms are unavailable.

Students in the kindergarten class at Richey, all of whom participated in one of two extended kindergarden projects also made educationally significant gains. Richey students went from an NCE of 28.2 (percentile 15) on the pretest of the Metropolitan Readiness Test to an NCE of 39 (percentile 30) on the posttest. Their gain of 10.8 NCEs was the highest in the last five years as was their posttest level.

Students participating in the Extended-Time Kindergarden Project also improved in self-development, independence, social interaction, communication, creative development, thinking and motor development as shown in Table 3. As indicated by teachers on the Child Performance Scale (CPS), the greatest needs of the participants were in the areas of creative development and thinking and the greatest gains were on items measuring those areas. Teachers did feel, however, that the instrument, the CPS, was somewhat easy for kindergarten students (the instrument had been developed for four-year-olds), and this may partly account for the results. Also, it may be expected that the greatest gains would be seen in the subscales where the students had the greatest room for growth.

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Table 3. Pre-Posttest Teacher Ratings of Extended Day Kindergarten Students on the Child Performance Scale

Subscale	N	Pretest M	Pretest SD	Pretest % Poss.	Posttest M	Posttest SD	Posttest % Poss.	Diff M	Diff %
1. Self-Development & Independence	81	16.0	3.2	80	18.7	2.0	93	2.7***	13
2. Social Interactn.	79	16.0	3.7	80	18.4	2.0	92	2.4***	12
3. Communication	71	31.1	7.0	78	36.1	4.5	90	5.0***	12
4. Creativie Devel.	81	14.5	3.7	72	18.1	2.0	93	3.5***	21
5. Thinking	61	17.5	4.3	73	22.0	2.5	94	4.5***	21
6. Motor Devel.	81	25.0	3.0	89	27.6	1.0	98	2.6***	9

***$p < .001$

Conclusions and Recommendations

The TUSD Chapter I Program initiated a new approach to providing supplementary educational services to kindergarten students during the 1982-83 school year. The educational approach to early childhood instruction and learning was based to a great extent on that of the TUSD Chapter I Parent and Child Education Project (PACE), a validated exemplary project for four-year-old children and their parents which had been in existence in TUSD since 1971.

The project developer and coordinator, Cecilia Avalos, as well as three of the teachers, the nurse and secretary served in both the PACE and the Extended-time Kindergarten Projects. This was of invaluable benefit in developing a strong curriculum base for the project and in reducing start-up costs for the project which were phased in over the first semester (September through January) in the five participating schools. However, this also placed some strain on the PACE Project and reduced parent involvement in centers implementing both projects.

The project was highly successful at all sites in terms of gains seen from pre-to

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posttesting on tests of early achievement and on teacher ratings of classroom performance. However, students who initially started school at a higher achievement level than the participants, declined in achievement relative to the national norm group during the project year. (Their raw score means improved, however, they did not improve as much as the Chapter I group (see Tables F and G). The project capitalized upon recent awareness in the field of education of the importance of a print-rich and language-rich environment, small group oral language interaction, and a wide variety of play and other intellectually stimulating activities to achievement both in kindergarten and throughout the primary grades (for a few examples see Balles, 1983; Laosa, 1983; Nurss, 1982; Sulzby, 1981; Teale, 1978; Lowes, 1975).

The project philosophy promoted a strong developmental approach of providing a high level of student engaged learning time in which students would experience success, to support and extend the students' learning strengths and self-confidence rather than focusing upon remediating deficiencies. Ethnographic monitoring and/or classroom observation is needed to ascertain the extent to which this goal was attained.

"The history of early childhood education, in contrast to public primary and secondary education, is notable for its concern with the role of parents and the family as educators." (Encyclopedia of Educational Research, 1982, p. 499) Parent participation and involvement was one of the goals of the project that was only partially fulfilled. As seen in Table B in the technical report, approximately 40 to 60 percent of the parents participated in the project by volunteering in the classroom, following-up activities at home, or attending parent meetings. Teachers felt a need for more stringent parent involvement requirements and assistance in preparing parent education workshops. Attendance was generally good in the project, from 75% to 95% at different sites, (Table A), indicating parental consistency in allowing the child to stay for the extended program.

Recommendations for project implementation and improvement are as follows:

1. The purpose of the project was to provide additional small group, high quality, focused teacher-guided instruction and stimulating play and other peer groups

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and individualized experiences for kindergarten students. Inservices, curriculum development, materials and equipment and project monitoring supported this goal. Additionally, in the 1983-84 school year, systematic program monitoring and observation is planned on a wider scale then previously to more closely estimate the extent to which the goal of increasing student engaged learning time and success through Chapter I services is attained.

2. Parent participation and involvement in the project should be increased. This may be made possible through a requirement that parents do participate in the project, that a series of parent education workshops are offered by principals and project staff and that parent meetings be offered later in the day or in evenings at schools where a considerable percentage of the parents are working outside of the home.

3. It is a recommendation of staff and of the project manager that the extended-time kindergarten project be separately staffed from the preschool project (PACE) so that the parent home visitation component in PACE not be diluted.

4. It is a recommendation that there be a uniform five-day weekly schedule for the Extended-time Kindergarten and that the length of the day coincide with the school day of grade 1 students.

5. It is recommended that consistent, project-wide inservices be planned at least monthly for Chapter I Extended-time and regular classroom teachers and aides with released time provided to improve the implementation of a strong research-based developmental approach to oral language development and early literacy.

6. Some principals and building staff have proposed other alternatives instead of the extended-kindergarten project for 1983-84. These include 1) reducing class size to no more than 15 students but having students attend only a half-day session, or 2) providing full-day programs for the entire classroom of approximately 27 students. These competing alternatives should be monitored closely and carefully evaluated.

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7. It is a recommendation of the State (Arizona) Education Department, Chapter I Office, that a screening program, including a wider variety of measures, be used to select and validate placement of students into the Chapter I Kindergarten Project. This has been implemented in those schools having Chapter I Kindergarten services in fall 1983.

8. It is a recommendation of the project manager to provide Chapter I aides in the regular classrooms containing large numbers of actual and/or eligible Chapter I participants. (In consultation with the State (AZ) Chapter I office, it was suggested that 85% or more of the students must be eligible for Chapter I services if the classroom is to receive aide assistance.) It would appear that better materials and equipment, more adult/child small group and individualized instruction and a language-rich (both in terms of oral language and the print environment) curriculum in the regular classroom might help offset the losses seen in the norm-referenced test scores of students who did not participate in the project.

9. Alternative assessment approaches should be developed and carried out by teachers and evaluators into the print-awareness, early writing and literacy acquisition and oral language assessment of participating students. In fall 1983 teachers attended a workshop in which they received instruction in administering a Book Handling Task which will be used with a sample of students.

10. In addition, teachers recommended that the same norm referenced measure be used in English and Spanish. Therefore, the Boehm Test of Basic Concepts, which is available in both languages, will be used as one measure in project evaluation and will replace the CAT. Because some of the students who enter the project score too low for valid testing on kindergarten level achievement tests, the Peabody Picture Vocabulary Test, which is suitable for children as young as 2½ years and which has no upper age limit, will provide one measure of data on the academic level of incoming students.

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Notes

1. The conclusions and recommendations sections are based upon process evaluation, such as interviews, both formal and informal, participation in all aspects of planning, inservice and implementation of the program and a survey of the extensive literature in the areas of early childhood development and early literacy, as well as upon test data. The recommendations are based upon the first author's professional and personal judgment, unless otherwise noted, and do not imply endorsement by the TUSD.

2. The test results may reflect some test artifact such as regression towards the mean thus causing lower scores to increase and higher scores to appear to decrease. However, the results seem consistent across schools.

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Tucson Unified School District
Chapter I Program

TECHNICAL SUPPLEMENT
for the
Evaluation of the Chapter I Extended Time Kindergarten Project
1982-83

by

Helen B. Slaughter and Stephen Powers
Chapter I Research Evaluators

November 1983

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ECIA CHAPTER I EXTENDED TIME KINDERGARTEN
EVALUATION REPORT
1982-83

Technical Supplement

Table A. Attendance of Students Participating in the Chapter I Extended-Time Kindergarten, 1982-83

Table B. Chapter I Teacher's Perceptions of Parent Particiation and Involvement Chapter I Extended K, 1982-83

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TABLE A. Attendance of Students Participating in the Chapter I Extended-time Kindergarten, 1982-83

School	Students Enrolled	Students Drops	Start Up Date	Days Wk/ Hrs per day	Possible Days Yr	Attendance** M	Attendance** %	Est Ext K Hours Per Yr
Cavett	15	-	Jan. 4	M-F (2 hr 10 m)	107	89.9	84.	195
Mission View*	21	3	Oct. 11	M-Th (2 hrs)	126	121	95	242
Richey*	25	2	Oct. 19	T-Th (1 hr 45 m)	93	84	90	147
Rose	13	4	Oct. 12	T-Th (1 hr 45 m)	90	68	75	119
Van Buskirk	15	-	Dec. 13	M-F (2 hr 15 m)	112	98	87	220.5

*Two sessions

**NOTE: Attendance data was compiled as of May first; the yearly total was estimated from percentage present up to May 1. Rose School total number includes 2 late entrants and Richey one, whose attendance was not entered into this analysis; students who dropped were not included.

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TABLE B. Chapter I Teacher's Perceptions of Parent Participation and Involvement Chapter I Extended K, 1982-83

Item	Responses								
					Participated				
	Not Sought		Did Not Volunteer		Once		More than Once		
	N	%	N	%	N	%	N	%	
Participated in Extended K Classroom	1	1	47	52	16	18	25	28	
								46%	
	Don't Know		Probably Didn't		Sometimes		Often		
	N	%	N	%	N	%	N	%	
Parent(s) Followed up Activities at Home	19	21	17	19	30	34	23	26	
								60%	
	Not Implemented		Invited; Did Not Attend		Attended				
					Once		More than Once		
	N	%	N	%	N	%	N	%	
Attended Ext. K Parent Meetings	15*	17	37	42	12	13	25	28	
								41%	
	No (perceived as a problem)		No (did not affect Child)		Sometimes		A great deal		
	N	%	N	%	N	%	N	%	
Supported Project in Other Ways	13	15	38	42	14	16	24	27	
								43%	

*One school accounts for this figure; no special Extended K parent meetings were held at the site.

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Table C. Previous Preschool Experience of 1982-83 Chapter I Extended-Time Kindergarten Students

Type of Preschool	N	%
None	36	38
PACE	25	26
Headstart	9	10
Day Care	5	5
Home Start	2	2
Other: Private Preschool	1	1
Babysitters	1	1
Repeating K	1	1
Not Known	15	16
Total	**95**	**100**

Summary:

1. Essentially none or unknown, 55%
2. PACE, 26%
3. Other preschool (not PACE), 17%
4. Repeating K, 1%

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Table D.Metropolitan Readiness Tests, Richey School Kindergarten 1977-83

	Pretest				Posttest			Difference	
Year	N	$\bar{X}$	%*	NCE	$\bar{X}$	%*	NCE	RS	NCE
1977-78	20	29.8	7	18.9	46.4	16	29.1	+16.6	10.2
1978-79	26	34.9	11	24.2	47.1	16	29.1	+12.2	4.9
1979-80	22	33.6	10	23.0	49.0	19	31.5	+15.4	8.5
1980-81	20	32.4	9	21.8	46.8	16	29.1	+14.4	7.3
1981-82	24	40.5	18	30.7	52.3	24	35.1	+11.8	4.4
1982-83	29	38.0	15	28.2	55.0	30	39.0	+17.1	10.8

*Percentile equivalent to the raw score.
Note: This data is from the Follow Through Evaluation.

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Table E. Breakdown on Each Test by School

	CAVETT		MISSION VIEW		COMPAR. SCHOOL		ROSE		VAN BUSKIRK	
	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$
CAT List Pre	53	10.06	40	8.65	35	11.11	61	10.61	38	11.26
CAT List Post	53	12.17	42	11.00	35	12.20	66	13.26	43	13.49
Boehm-Pre Español	7	27.71	13	21.62	3	26.33	15	30.33	7	32.86
CAT Letter* Names	51	15.73	42	16.71	35	16.00	66	17.80	42	17.93
SS		198		206		198		224		224
NCE		36		31		27		40		40
CAT Letter* Sounds	49	11.65	42	12.88	35	12.23	63	14.54	42	15.05
SS		215		221		215		233		233
NCE		36		39		36		45		45
Boehm Posttest Español	8	38.63	17	32.29	4	30.00	14	38.86	10	36.00

Note: In the letter names subtest, 19 are possible; in the letter sounds subtest, 21 are possible.

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Figure 1. Percentage Successful on Child Performance Scale Ratings for Chapter I Extended K Students

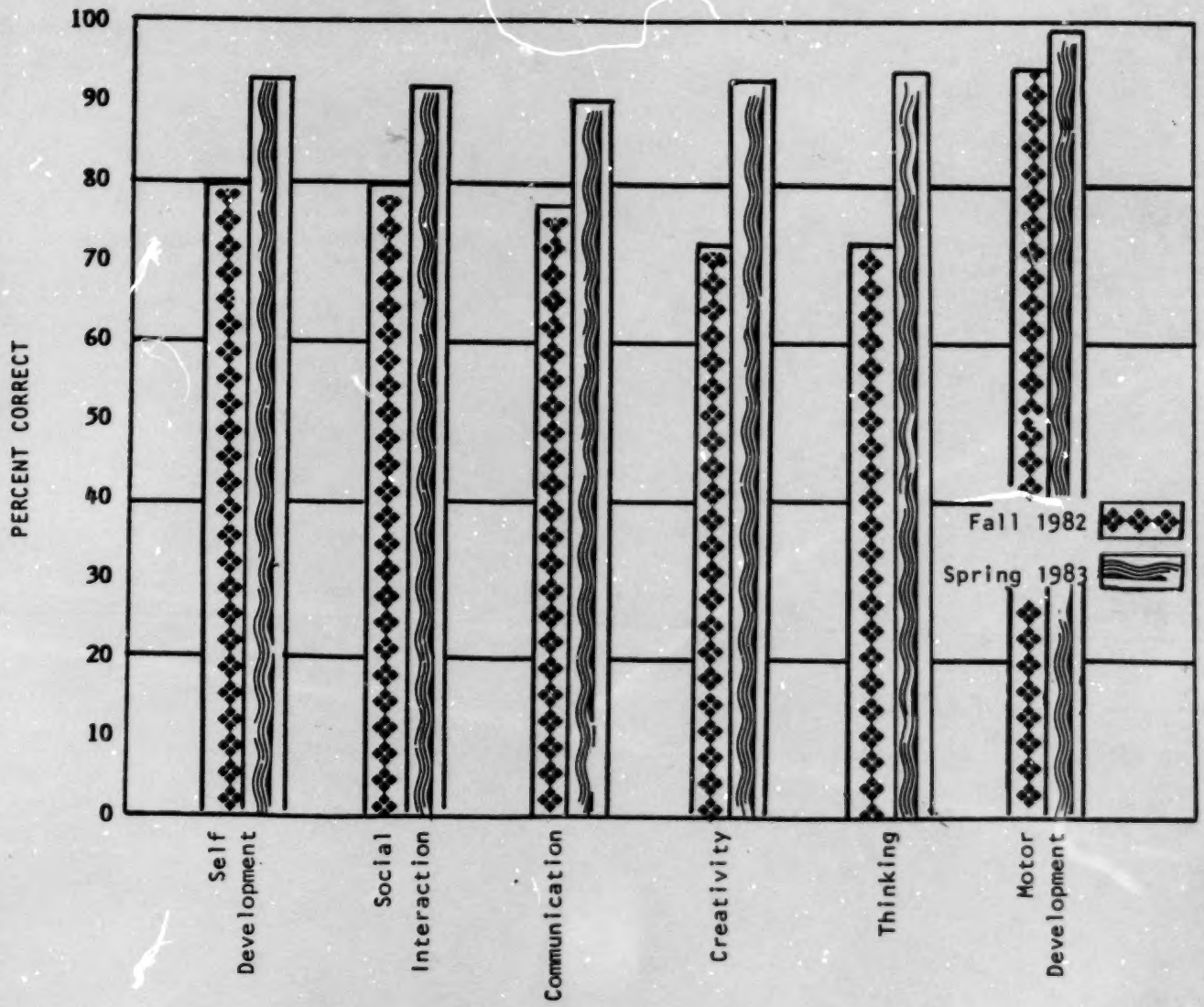

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Table F. Raw* Score Differences Between Pre-Posttest Means for English or Bilingual Speakers on the CAT/C, Listening Subtest, Administered to Kindergarten Students in Fall 1982 and Spring 1983

School	Chapter I Ext. K			Non-Chapter I K		
	Pre RS	Post RS	Diff.	Pre RS	Post RS	Diff.
Cavett	7	11	4	11	13	2
Mission View	6	10	4	9	11	2
Rose	9	14	5	11	13	2
Van Buskirk	8	15	7	12	14	2
Comparison School				11	12	1
Total	7	12	5	11	13	2

*Decimals were rounded from .5 up, less than .5 down

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Table G. Differences Between Raw Score Means for Spanish Monolingual or Dominant Kindergarten Students on the Prueba Boehm de Conceptos Basicos, 1982-83

School	Chapter I				Non-Chapter I			
	N	Pre RS	Post RS	Diff	N	Pre RS	Post RS	Diff
Cavett	1	24	45	21	5	27	32	5
Mission View	11	21	35	14	2	25	25	—
Rose	—	—	—	—	12	33	40	7
Van Buskirk	2	29	36	7	5	34	38	4
Comparison School	—	—	—	—	3	26	31	5
Total	**14**	**22**	**36**	**34**	**27**	**31**	**37**	**6**

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